ASOS MODIFICATION NOTE 27 (for Electronics Technicians)
Engineering Division
W/OSO321:BGM/MGC

SUBJECT	:	Reactivation of ASOS Hygrothermometer Autobalance Module.
PURPOSE	:	This modification reactivates the autobalance module in the ASOS Hygrothermometers. The Autobalance module was deactivated by Modification Note 16 (ECP S00549).
EQUIPMENT AFFECTED	:	ASOS Hygrothermometer
PARTS REQUIRED	:	None
MODIFICATION PROCUREMENT	:	None
SPECIAL TOOLS REQUIRED	:	None
TIME REQUIRED	:	1 hour
EFFECT ON OTHER INSTRUCTIONS	:	ASOS Modification Note 16 and Maintenance Note 15 are obsolete.
AUTHORIZATION	:	This modification is authorized by the Engineering Design Branch, W/OSO31
VERIFICATION STATEMENT	:	Returns the system to its original operational configuration which has been tested successfully.

GENERAL

It was discovered during environmental testing at T&EB that some 1063/1088 hygrothermometers may experience the autobalance servo potentiometer being driven to extremely high values during the daily sensor heat cycle under certain temperature extremes. This will cause the dirty mirror error flag to be set in the temperature/dew-point data message for the 1088 and thicker than normal dew layers on the 1063 and the 1088 hygrothermometers. A thicker dew has caused problems with frozen mirrors under certain conditions.

On the 1088 this problem can occur at ambient temperatures above 95°F and temperatures below 10°F. On the 1063 this problem will only occur in temperatures below 10°F. The problems will not occur on 100 percent of the hygrothermometers, but are dependent on the component tolerances in the individual hygrothermometers.

The interim solution was to disconnect the autobalance on all ASOS hygrothermometers (ECP S00549). However, this reduced the mirror cleaning interval from 90 to 45 days. Due to the additional work load, the autobalance module on all 1063/1088 hygrothermometers will be reconnected, and a 90-day maintenance cycle reestablished.

The contractor is developing sensor firmware to correct the problem at the temperature extremes. At least three seasons of testing, including one winter, will be required to validate the fix before it can be approved for use in ASOS.

BEFORE BEGINNING PROCEDURE

1. Get approval of the responsible MIC/OIC before starting deactivation. You may complete the modification on any day of the month if permission is granted, and the restrictions in steps 3 and 4 are complied with.

2. **Commissioned Sites Only**: Do **not** start during bad weather, precipitation, instrument flight rule (IFR) conditions, or if any of those conditions is expected within 3 hours. These meteorological conditions will be defined by the responsible MIC/OIC.

3. Do not start at a time that will conflict with scheduled synoptic observations at ØØ, Ø3, Ø6, Ø9, 12, 15, 18, and 21Z. Although 10 minutes should be sufficient, allow 0.5 hour to complete.

4. Immediately before beginning work at NWS-staffed sites, the MIC/OIC/observer will inform the tower and any other critical users that the hygrothermometer will be shut off (unstaffed sites, the el tech will inform tower).

5. Do not begin until immediately after an hourly observation has been transmitted. At NWS-staffed sites, normal backup observing procedures will be implemented.

6. Call the AOMC at 1-800-242-8194. Inform the person who answers the phone at which office you will be completing Modification Note 27.

7. Log on as TECH, turn off report processing for the Hygrothermometer, stop here and perform the modification MOD 27.

    1. Log on as **TECH**.
    2. Key the **MAINT** screen
    3. Key the **ACTION** page.
    4. Press the **Start** key
    5. Exit, log off as **TECH**. Complete the modification.

PROCEDURE

1. Follow normal procedures for ASOS maintenance and powering down the hygrothermometer. Reference the ASOS Site Technical Manual, Table 5.5.13, for installation of autobalance module.

2. Turn power to the hygrothermometer OFF at the DCP.

3. Remove the 9-pin autobalance connector J2 from its restrained position. Connect J2 to its mating autobalance connector P2 and install the mounting washers and screws.

4. Clean the mirror and calibrate the optical loop using the ASOS Site Technical Manual, Table 5.5.3 or Table 5.5.4.

5. For operation during the summer season, the risk of poor autobalance operation is reduced by having the autobalance cycle occur at night (See General above). The cycle occurs 12 hours after power up and every 24 hours thereafter. For optimum performance of the autobalance the hygrothermometer should be powered up during the afternoon hours. Remote control of power can be used to initiate the cycle or to correct for mistimed cycles caused by power outages. Proper timing is not mandatory but may be useful for some sites.

6. Make appropriate entries in the **SYSLOG** using the Maintenance Action keys, Field Modification keys, and comment field.

Follow these steps:

1. Log on as **TECH** once the modification has been completed.
2. Key the **MAINT** screen.
3. Key the **ACTION** page.
4. Key **FMK** - Enter the modification as follows MOD 27.
   On the second line of the screen verify that only MOD 27 is displayed. Complete by entering Y in the Y/N if only MOD 27 is displayed.
5. Check the **SYSLOG** and verify the FMK message. Notify the **AOMC** via telephone the MOD 27 is complete.

REPORTING MODIFICATION

Target date for completing this modification is 30 days after receipt of modification note. Report completed modification on WS Form A-26, Engineering Management Reporting System Maintenance Record, according to instructions in EHB-4, part 2, Appendix F, using reporting code ATDP. Also, record the modification number in block 17(a) as 27 (see attachment for a completed sample of WS Form A-26).

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W/OSO321:BGMcCormick:713-1834:5/16/95:WP51 Files: ASOMOD27.H11, disk HB11F:Spellcheck sol 5/16/95 :corrections 5/19/95:redone 6/5/95:redone 6/6/95:sol:spellchecked.